

The Ordovician–Silurian boundary in the Altai Mountains, USSR

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Synopsis

The Ordovician–Silurian boundary is repeatedly exposed in the Altai–Sayan fold belt, with the best-studied outcrops in the Charysh–Inya structural zone near Ust'-Chagyryka and Chineta, where the *persculptus* and *acuminatus* zones are both known in association with shelly faunas.

Ordovician and Silurian deposits in the western part of the Altai–Sayan fold-belt are not only widely distributed in the Altai, but in the Kuznetsk Alatau, Salair and Shoria Mountains as well. The boundary interval, however, is known only from the Altai Mountains in two structural-formational zones, the Anui–Chuya and Charysh–Inya zones. In the first zone there are several sections where it is possible to see a normal stratigraphical succession from Ordovician to Silurian. However, most of them are not well characterized palaeontologically, especially the boundary beds (Yolkin *et al.* 1978; Sennikov & Sennikov 1982). Because of this, the boundary interval is shown as a biostratigraphical break in the stratigraphical correlation charts for this zone (Khomentovskiy & Tesakov 1983).

The Ordovician–Silurian boundary interval is better known in the Charysh–Inya Zone. Here, in different areas, there are now more than ten known sections. In each such area there are usually several sections with transitional continuity between the two systems, though there are some differences in the faunas from area to area. The best of these sections occur near Ust'-Chagyryka and Chineta villages (Yolkin & Zheltonogova 1974; Sennikov *et al.* 1979, 1982, 1984). The faunal assemblages in these sections in the two areas include graptolites, conodonts, trilobites, gastropods, orthoconic cephalopods, brachiopods, ostracodes, corals, chitinozoans and polychaetes, part of which have been monographed (Sennikov 1976, 1978; Moskalenko 1977; Severgina 1978, 1984; Yolkin 1983). The most important fossils for the subdivision and correlation of these sections are the graptolites. They are the predominant group numerically and have by far the best international distribution stratigraphically.

It is important to draw attention to the association, in the boundary beds, of graptolites, conodonts and trilobites, especially *Dalmanitina*. This indicates the possibility for future work directed towards clarifying and refining the correlation of Ordovician–Silurian boundary beds in the Altai, but perhaps also globally. The best boundary in the Altai, as in China (Chen Xu 1984) would be somewhat below the *acuminatus* Zone decided by the Ordovician–Silurian Boundary Working Group (Holland 1985). The beds with *persculptus* correspond to the onset of a wide transgression.



Fig. 1 Location of reference sections of Ordovician and Silurian boundary beds in the Altai Mountains.

Fig. 2 Geological map of the left bank of Burobyanka Creek near Chinteta village.

Fig. 3 Geological map of the left bank of Chagyryka Creek: 3a—sketch map, 3b—details of section areas.

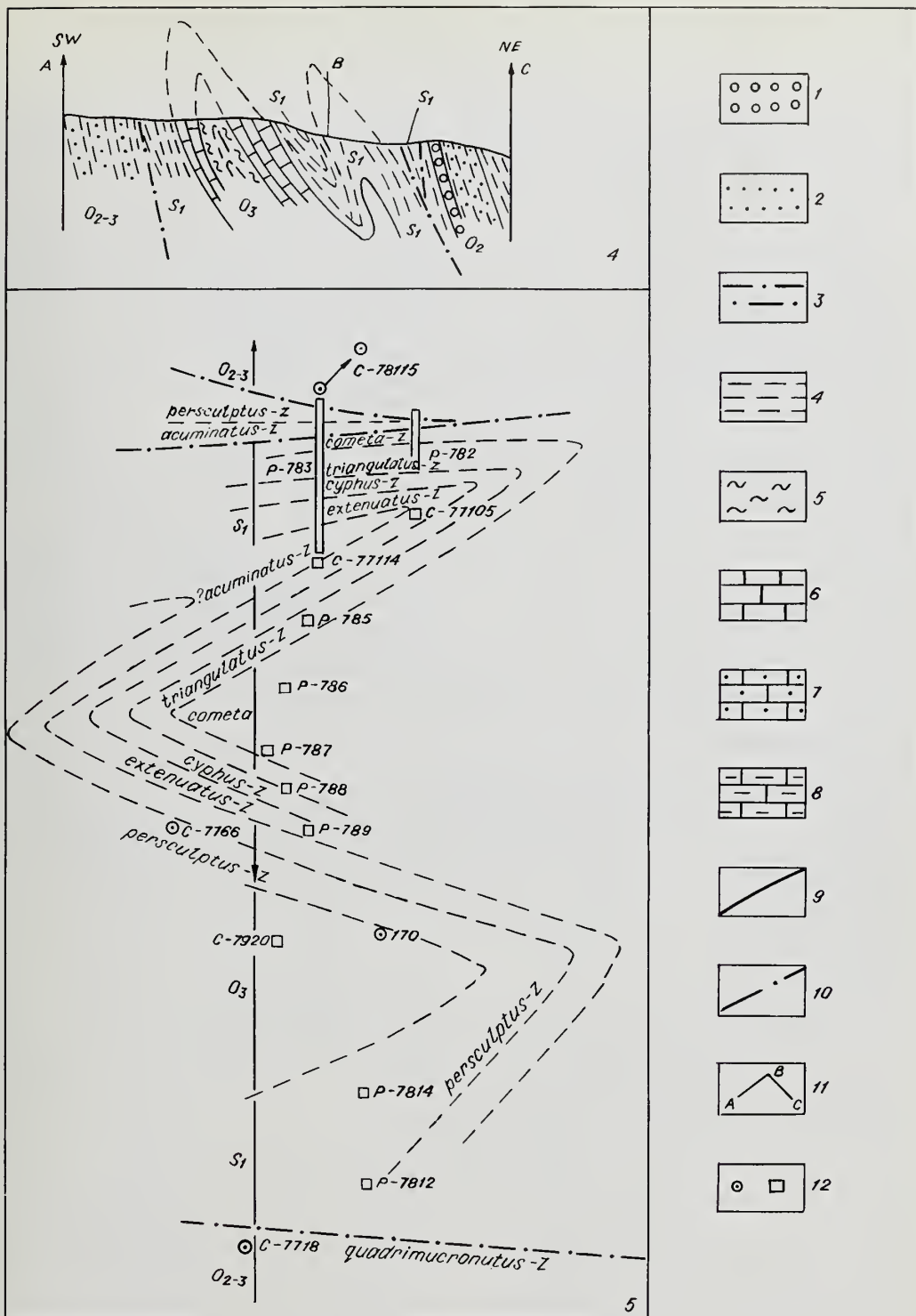


Fig. 4 Profile on line A-B-C of Fig. 3b.

Fig. 5 Details of graptolite zonation on line A-B-C of Fig. 3b.

Legend for Figs 2-7. 1—conglomerates, 2—sandstones, 3—silty sandstones, 4—siltstones, 5—cherty rocks, 6—limestones, 7—sandy limestones, 8—argillaceous limestones, 9—boundaries, 10—faults, 11—line of sections, 12—outcrops and artificial exposures (fauna collection points).

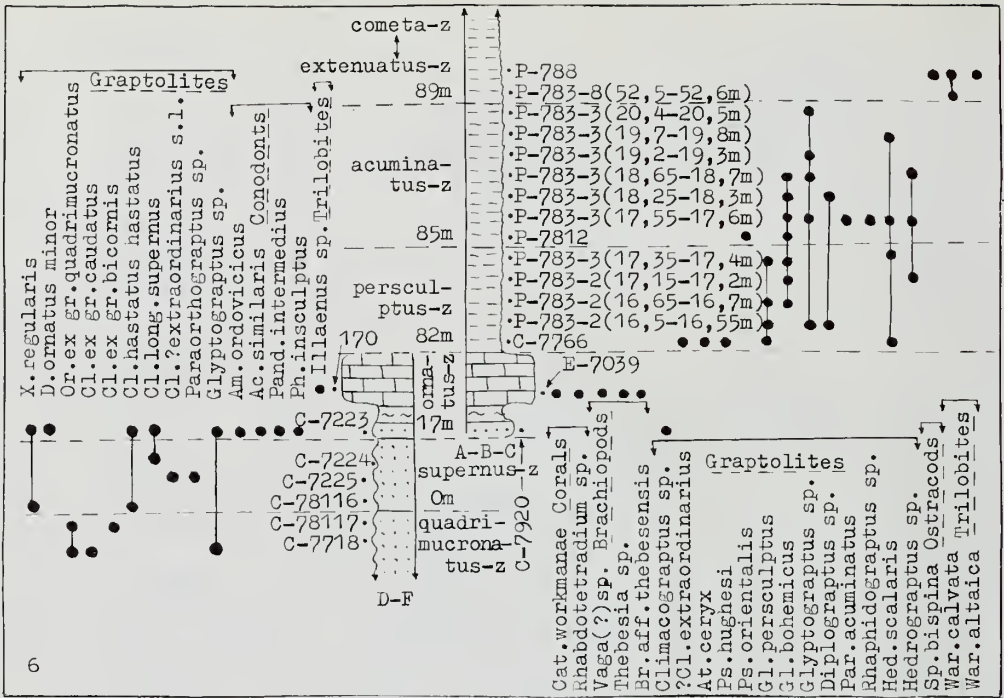


Fig. 6 Distribution of faunas in sections near Ust'-Chagyrka village.

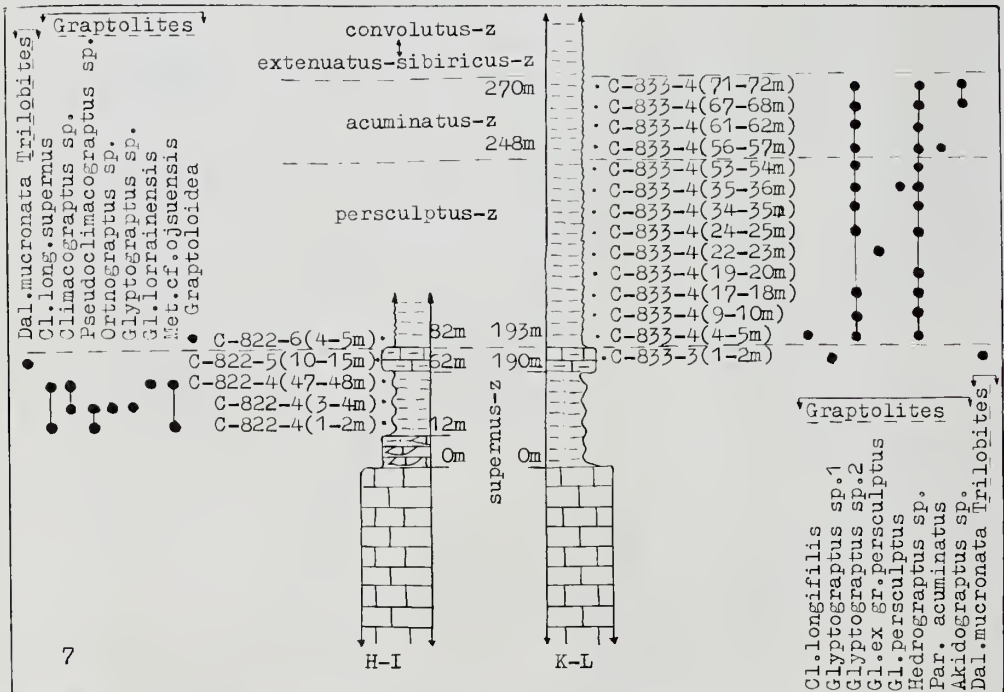


Fig. 7 Distribution of faunas in sections near Chineta village.

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